

December 21, 2004

Mr. Robert Stone
Humboldt County Department of Health and Human Services
Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

**Re: Quarterly Groundwater Monitoring Data for November 2004
Former Dutra Trucking, 5005 Boyd Road, Arcata, California
LOP # 12264**

Dear Mr. Stone:

On behalf of Mr. Frank Dutra, Winzler & Kelly Consulting Engineers (Winzler & Kelly) is submitting these quarterly groundwater monitoring data collected in November 2004 for the above-referenced site.

The purpose of this letter report is to document the activities, results, and findings of the quarterly groundwater monitoring program. All figures and tables referred to herein are included in Appendix A and Appendix B, respectively. Laboratory analytical reports are contained in Appendix C, Standard Operating Procedures (SOPs) are contained in Appendix D, and field notes are contained in Appendix E.

Quarterly Monitoring Activities

On November 30, 2004, a Winzler & Kelly technician obtained water levels from monitoring wells MW-2 and MW-3 (monitoring wells MW-1, MW-4, and MW-5 were dry). Only monitoring well, MW-2, contained adequate water for purging prior to sampling, and though MW-3 was sampled; purging was not performed due to minimal water present in the well. Monitoring well MW-2 was purged and sampled, and MW-3 was sampled according to Winzler & Kelly SOPs for *Monitoring Well Purging and Sampling Activities* (Appendix D). In order to calculate groundwater gradient, at least three water levels collected from the wells are necessary thus gradient calculations were not possible for the November 30, 2004, monitoring event. Site vicinity, monitoring well locations, and previous groundwater gradient information are shown on Figures 1, and 2, respectively (Appendix A).

Hydrographic Data

Depth to water measurements were collected after removing all well caps and allowing the wells to stabilize for at least 15 minutes. Cumulative water level measurements are presented in Table 1 (Appendix B). Depth to water and hydrographic parameters calculated from well casing elevation and depth to water data were performed in accordance with Winzler & Kelly SOPs (Appendix D).

▼ **Creative Solutions for Over 50 Years** ▼

633 Third Street, Eureka, CA 95501-0147
tel 707-443-8326 fax 707-444-8330
www.w-and-k.com

Mr. Robert Stone
December 21, 2004
Page 2

On March 3, 2004, surveyed well locations and top of well casing elevation data was collected by Ontiveros & Associates to facilitate calculation of groundwater gradient and allow electronic data submittal. Top of casing elevations were surveyed to the nearest 0.01 foot above mean sea level (msl) relative to the NAD88 datum, as required for submittal of survey data to the State Water Resource Control Board Geotracker System (Geotracker). Well locations were surveyed relative to the State Plane Coordinate System and in degrees latitude/ longitude to seven decimal places. Cumulative hydrographic data are discussed in the narrative below, as well as being presented on Figure 2, (Appendix A).

The February and May 2004 groundwater gradients between the variable site monitoring wells containing water were calculated using triangulation. The February 2004 groundwater gradient was calculated using data from four wells to be 12.53 feet per 100 feet and flowing in a westerly direction at approximately 271 degrees Azimuth. The May 2004 groundwater gradient using data from three wells was calculated to be 16 feet per 100 feet and flowing in a northeasterly direction at approximately 71 degrees Azimuth (see Figure 2, contained in Appendix A for Gradient Maps).

The May 2004 groundwater gradient direction is opposite what one would predict based upon topography, the location of the Mad River in relation to the site, and the previous groundwater gradient calculations. Given that the three wells providing adequate water for gaging depth to water in May 2004 included MW-3 within the former tank excavation, and MW-2 at the eastern margin of the tank pit, and MW-5 north east of the tank pit, groundwater gradient calculations appear to be skewed due the perched groundwater condition apparent in the former tank excavation. Table 2 (Appendix B) summarizes cumulative groundwater gradient calculations. Groundwater gradient calculations using triangulation or linear regression require at least three sample points. Due to the lack of three groundwater gage points available during November 2004, gradient calculations could not be made.

The five site monitoring wells at the former Dutra Trucking site were drilled during November 2003. At that time, only MW-3 drilled to 15 feet within the tank excavation produced abundant water at a shallow depth. Monitoring well MW-2 was drilled to 20 feet at the eastern margin of the former underground storage tank (UST) excavation. Monitoring wells MW-1, MW-4 and MW-5 were initially drilled peripheral to the former tank excavation to the planned depth of 20 feet and then were deepened to 25 feet to encounter the water table.

Across the approximately 100 feet between monitoring wells at this site, groundwater elevation typically differs by greater than 10 feet. According to the May 2004 gradient calculations, groundwater gradient was 16 feet per 100 feet. As the former Dutra Trucking site is nearly flat, these groundwater data appear to indicate that a perched condition is present within the former UST excavation to explain the calculated steep groundwater gradients.

Mr. Robert Stone
December 21, 2004
Page 3

Groundwater Sampling

On November 30, 2004, monitoring well MW-2 was purged and sampled while MW-3 was sampled without purging. All monitoring well purging and sampling was performed in accordance with Winzler & Kelly Standard Operating Procedures (Appendix D). After purging at least three wetted casing volumes of water from monitoring well MW-2, the water level was allowed to recover to approximately 80% of the pre-purge level before sampling. Monitoring well MW-2 was sampled within 1 hour of purging.

Monitoring well MW-3 did not contain enough water for purging prior to sampling. The water level, measured at 14.41 feet below ground surface (bgs), in relation to the total depth of the well, measured at 14.55 feet bgs, left the height of the available water column at only 0.14 feet. This observation led to the decision to collect the sample without purging.

As part of the quarterly groundwater monitoring program, groundwater samples collected from the site monitoring wells were analyzed for the following:

- Total Petroleum Hydrocarbons as Diesel (TPH-D) by EPA Method 3550;
- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) and Methyl Tertiary Butyl Ether (MTBE) by EPA Method 8021B;

Groundwater Analytical Results

A concentration of TPH-D was measured at 9,600 parts per billion (ppb) from groundwater samples obtained from monitoring well MW-3. All other constituents analyzed from monitoring well MW-2 and MW-3 were below laboratory detection limits. Laboratory analytical results will be submitted electronically to the State Water Resources Control Board (SWRCB) Geotracker System. Laboratory analytical results are presented in Table 3 (Appendix B). Copies of the laboratory analytical reports are included in Appendix C.

Disposition of Wastewater

Purge water is currently being stored in 55-gallon drums on site pending disposal arrangements.

Quality Assurance/Quality Control (QA/QC)

Field QA/QC was provided by adherence to the Winzler & Kelly Standard Operating Procedures for "Monitor Well Purging and Sampling Activities", as contained in Appendix D.

Laboratory QA/QC was provided by the use of lab Method Blanks to preclude false positive analysis of analytes and the use of Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (LCS-D) samples to evaluate the percentage recovery of target analytes and reproducibility during analysis.

Mr. Robert Stone
December 21, 2004
Page 4

The laboratory provided the following notes regarding QA/QC:

“BTEX:

The laboratory control sample duplicate (LCSD) recovery was below the lower acceptance limit for MTBE. The laboratory control sample (LCS) recovery was within the acceptance limits; therefore, the data were accepted.

The relative percent difference (RPD) for the laboratory control samples was above the upper acceptance limit for MTBE. This indicates that the results could be variable. Since there were no detectable levels of analyte in the samples, the data were accepted.

TPH as Diesel:

Sample MW-3 contains material similar to degraded or weathered diesel oil.

The surrogate for sample MW-3 could not be quantified due to a sample dilution.”

Discussion

Groundwater gradient was calculated to flow to the west (271 degrees) in February 2004 at 12.53 feet per 100 feet. In May 2004, the groundwater flow direction was calculated to be to the northeast (71 degrees) at 16 feet per 100 feet. It appears that groundwater flows toward the Mad River during rainy months (February) and steeply away from the river during dry months (May). Due to insufficient water level data, groundwater gradient was not able to be calculated during the November 2004 sampling event.

Groundwater quality outside the former UST excavation continues to contain no detectable dissolved contaminants. Groundwater in the excavation continues to produce TPH-D at 320 ppb (February 2004), 850 ppb (May 2004), and 9,600 ppb (November 2004). These values are decreased from the December 2002 concentration of 21,000 ppb TPH-D. Residual contaminations in groundwater peak in monitoring well MW-3 during the late fall and early winter (November and December) and do not appear to correlate with elevated groundwater stands during mid-winter.

Conclusions

- The November 30, 2004, groundwater sampling event encountered groundwater in two wells thus groundwater gradient and direction were not able to be calculated,
- Groundwater elevation and contaminant data appear to indicate that perched groundwater is restricted to the former UST excavation.
- This perched condition appears to restrict the migration of residual diesel contaminant present in groundwater to the confines of the former tank excavation.
- Concentrations of TPH-D were detected at a concentration of 9,600 parts per billion from groundwater samples obtained from monitoring well MW-3 only, while all other constituents analyzed remained below laboratory detection limits in monitoring wells MW-2 and MW-3.

Mr. Robert Stone
December 21, 2004
Page 5

- The next groundwater sampling event is scheduled for February 2005. This event will be scheduled following a particularly rainy period to improve the likelihood of obtaining groundwater samples from all five wells.

If you have any questions or comments, please do not hesitate to call.

Sincerely,
WINZLER & KELLY

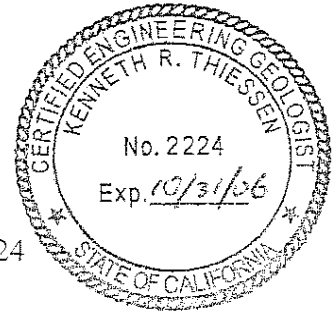


Holly Vadurro
Staff Scientist

Reviewed by:



Kenneth Thiessen, CEG #2224
Geologist



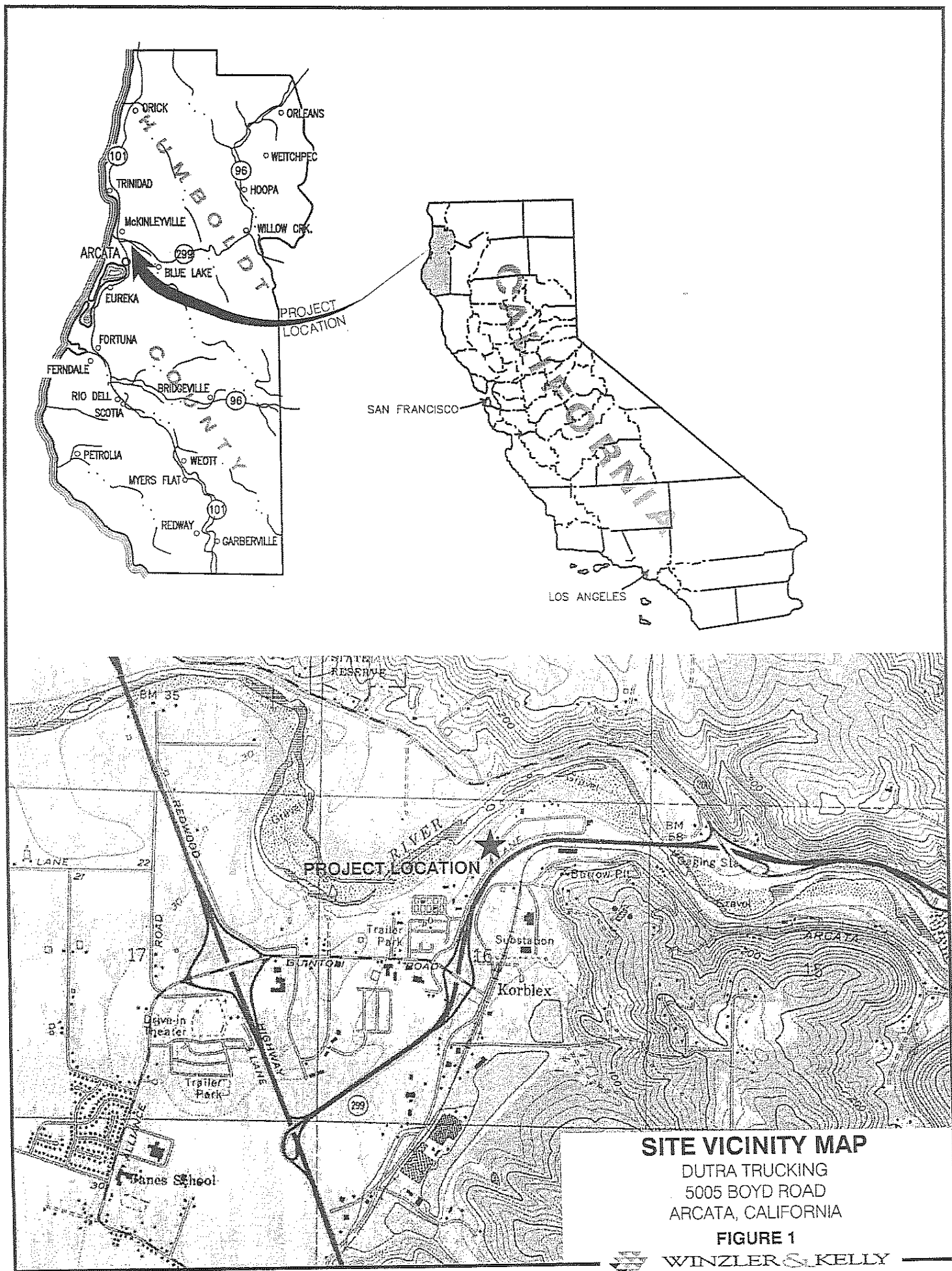
sw

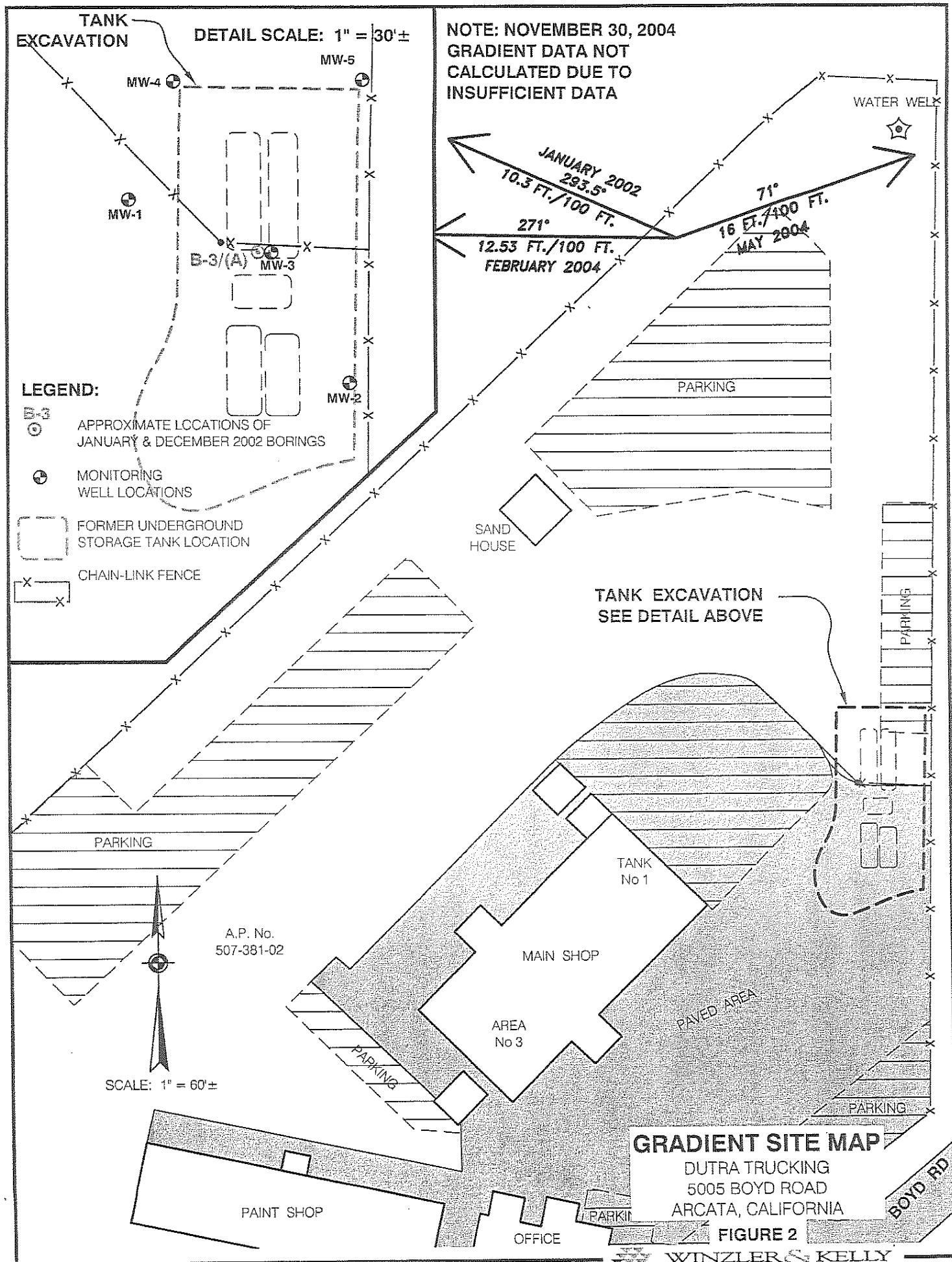
Enclosures: Appendix A: Figures
Figure 1 Site Vicinity Map
Figure 2 Gradient Site Map
Appendix B: Tables
Table 1 Groundwater Level Measurements
Table 2 Groundwater Gradient Data
Table 3 Groundwater Analytical Results
Appendix C: Laboratory Analytical Reports
Appendix D: Standard Operating Procedures
Appendix E: Field Notes

Distribution list:

Mr. Frank Dutra
P.O. Box 898
Willow Creek, California 95573

Mr. Robert Stone
Humboldt County Department of Public Health
Division of Environmental Health
100 H Street, Suite 100
Eureka, California 95501





Appendix B

Tables

TABLE 1
GROUNDWATER LEVEL MEASUREMENTS
Former Dutra Trucking, LOP #12264

Well Number	Date	Groundwater Elevation (ft)	Top of Casing (ft)	A Depth to Water (ft)	B Depth to Product (ft)	(A-B=C) Product Thickness (ft)	D Correction Factor (C x 0.729*)	A-D Equivalent Depth to Water (ft)
MW-1	4-Feb-04	33.48	48.03	14.55	0.00	0.00	0.00	14.55
	3-May-04	NA	48.03	DRY	0.00	0.00	0.00	NA
	30-Nov-04	NA	48.03	DRY	0.00	0.00	0.00	NA
MW-2	4-Feb-04	39.94	47.49	7.55	0.00	0.00	0.00	7.55
	3-May-04	34.49	47.49	13.00	0.00	0.00	0.00	13.00
	30-Nov-04	33.96	47.49	13.53	0.00	0.00	0.00	13.53
MW-3	4-Feb-04	37.49	47.80	10.31	0.00	0.00	0.00	10.31
	3-May-04	35.35	47.80	12.45	0.00	0.00	0.00	12.45
	30-Nov-04	33.39	47.80	14.41	0.00	0.00	0.00	14.41
MW-4	4-Feb-04	NA	48.54	DRY	0.00	0.00	0.00	NA
	3-May-04	NA	48.54	DRY	0.00	0.00	0.00	NA
	30-Nov-04	NA	48.54	DRY	0.00	0.00	0.00	NA
MW-5	4-Feb-04	40.06	48.62	8.56	0.00	0.00	0.00	8.56
	3-May-04	30.17	48.62	18.45	0.00	0.00	0.00	18.45
	30-Nov-04	NA	48.62	DRY	0.00	0.00	0.00	NA

*0.729 is the density of gasoline at 150C as referenced in the API Publication 1628, Second Edition, August, 1989

NA Not applicable

NS Not surveyed. Wells are to be surveyed in March 2004

Table 2
Groundwater Gradient Data
Former Dutra Trucking, LOP #12264

Date	Gradient Direction (degrees Azimuth)	Gradient Magnitude (ft./100 ft.)
1/29/2002 *	Northwest (293.5)	10.3
2/04/2004 **	West (271)	12.53
5/03/2004 **	Northeast (71)	16
11/30/2004****	NA	NA

* Gradient direction and magnitude based upon temporary well installations
 ** Gradient direction and magnitude based upon permanent monitoring well locations
 **** Gradient direction and magnitude could not be calculated; three of the five wells were not measurable due to lack of water.

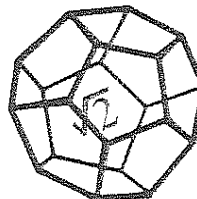
TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Former Dutra Trucking, LOP #12264
(All units reported in parts per billion)

Sample ID	Sample Date	TPH as Diesel (ppb)	TPH as Motor Oil (ppb)	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Total Xylenes (ppb)	(MTBE) Methyl Tertiary Butyl Ether (ppb)	(DIPE) Diisopropyl Ether (ppb)	(ETBE) Ethyl Tertiary Butyl Ether (ppb)	(TAME) Tertiary Amyl Methyl Ether (ppb)	(TBA) Tertiary Butyl Alcohol (ppb)	(1,2 DCB) 1,2-Dichlorobenzene (ppb)	(1,3 DCB) 1,3-Dichlorobenzene (ppb)	(1,4 DCB) 1,4-Dichlorobenzene (ppb)	(1,2 DCA) 1,2-Dichloroethane (ppb)	(EDB) 1,2-Dibromoethane (ppb)	Chlorobenzene (ppb)
INITIAL SUBSURFACE INVESTIGATION 2002																			
B1	28-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2	28-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	29-Jan-02	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Domestic Well	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	30-Dec-02	21,000	6,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HYDROGEOLOGIC INVESTIGATION 2004																			
MW-1	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	4-Feb-04	320	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 2004 GROUNDWATER MONITORING EVENT																			
MW-2	3-May-04	ND	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	3-May-04	850	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	3-May-04	ND	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NOVEMBER 2004 GROUNDWATER MONITORING EVENT																			
MW-2	30-Nov-04	ND	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	30-Nov-04	9,500	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ND Not Detected
NA Not Analyzed

Appendix C

Laboratory Reports



**NORTH COAST
LABORATORIES LTD.**

December 08, 2004

RECEIVED
DEC 13 2004

WK-EUREKA

Winzler and Kelly
633 Third Street
Eureka, CA 95501

Attn: Ken Thiessen

RE: 90129801.049 Dutra Trucking

Order No.: 0411596

Invoice No.: 46631

PO No.:

ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction Client Sample Description

01A	MW-2
01D	MW-2
02A	MW-3
02C	MW-3

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Laboratory Supervisor(s)

QA Unit

Jesse G. Chaney, Jr.
Laboratory Director

CLIENT: Winzler and Kelly
Project: 90129801.049 Dutra Trucking
Lab Order: 0411596

CASE NARRATIVE

BTEX:

The laboratory control sample duplicate (LCSD) recovery was below the lower acceptance limit for MTBE. The laboratory control sample (LCS) recovery was within the acceptance limits; therefore, the data were accepted.

The relative percent difference (RPD) for the laboratory control samples was above the upper acceptance limit for MTBE. This indicates that the results could be variable. Since there were no detectable levels of analyte in the samples, the data were accepted.

TPH as Diesel:

Sample MW-3 contains material similar to degraded or weathered diesel oil.

The surrogate for sample MW-3 could not be quantified due to a sample dilution.

Date: 08-Dec-04
WorkOrder: 0411596

ANALYTICAL REPORT

Client Sample ID: MW-2
Lab ID: 0411596-01A

Received: 11/30/04

Collected: 11/30/04 13:02

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		12/2/04
Benzene	ND	0.50	µg/L	1.0		12/2/04
Toluene	ND	0.50	µg/L	1.0		12/2/04
Ethylbenzene	ND	0.50	µg/L	1.0		12/2/04
m,p-Xylene	ND	0.50	µg/L	1.0		12/2/04
o-Xylene	ND	0.50	µg/L	1.0		12/2/04
Surrogate: Cis-1,2-Dichloroethylene	98.4	85-115	% Rec	1.0		12/2/04

Client Sample ID: MW-2
Lab ID: 0411596-01D

Received: 11/30/04

Collected: 11/30/04 13:02

Test Name: TPH as Diesel

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel	ND	50	µg/L	1.0	12/2/04	12/2/04
Surrogate: N-Tricosane	68.6	27.6-107	% Rec	1.0	12/2/04	12/2/04

Client Sample ID: MW-3
Lab ID: 0411596-02A

Received: 11/30/04

Collected: 11/30/04 11:30

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		12/2/04
Benzene	ND	0.50	µg/L	1.0		12/2/04
Toluene	ND	0.50	µg/L	1.0		12/2/04
Ethylbenzene	ND	0.50	µg/L	1.0		12/2/04
m,p-Xylene	ND	0.50	µg/L	1.0		12/2/04
o-Xylene	ND	0.50	µg/L	1.0		12/2/04
Surrogate: Cis-1,2-Dichloroethylene	98.9	85-115	% Rec	1.0		12/2/04

Client Sample ID: MW-3
Lab ID: 0411596-02C

Received: 11/30/04

Collected: 11/30/04 11:30

Test Name: TPH as Diesel

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel	9,600	1,200	µg/L	25	12/2/04	12/3/04
Surrogate: N-Tricosane	NQ	27.6-107	% Rec	25	12/2/04	12/3/04



North Coast Laboratories, Ltd.

Date: 08-Dec-04

CLIENT: Winzler and Kelly

Work Order: 0411596

Project: 90129801.049 Dutra Trucking

QC SUMMARY REPORT

Method Blank

Sample ID: MB-120104	Batch ID: R32260	Test Code: BTXEW	Units: µg/L	Analysis Date: 12/1/04 8:46:26 PM	Prep Date:						
Client ID:	Run ID: ORGC8_041201B	SeqNo: 468101									
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	3.0									
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	0.50									
o-Xylene	ND	0.50									
Cis-1,2-Dichloroethylene	0.903	0.10	1.00	0	90.3%	85	115	0			

Sample ID: MB-12562	Batch ID: 12562	Test Code: TPHDIW	Units: µg/L	Analysis Date: 12/2/04 5:07:43 PM	Prep Date: 12/2/04						
Client ID:	Run ID: ORGC7_041202A	SeqNo: 467775									
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel	41.55	50									J
N-Tricosane	36.5	0.10	50.0	0	73.0%	28	107	0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 08-Dec-04

CLIENT: Winzler and Kelly

Work Order: 0411596

Project: 90129801.049 Dutra Trucking

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID: LCS-04709	Batch ID: R32260	Test Code: BTXEW	Units: µg/L	Analysis Date: 12/1/04 5:54:11 PM		Prep Date:					
Client ID:	Run ID: ORGC8_041201B	SeqNo: 468099									
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	41.43	3.0	40.0	0	104%	85	115	0			
Benzene	5.256	0.50	5.00	0	105%	85	115	0			
Toluene	5.315	0.50	5.00	0	106%	85	115	0			
Ethylbenzene	5.283	0.50	5.00	0	106%	85	115	0			
m,p-Xylene	10.48	0.50	10.0	0	105%	85	115	0			
o-Xylene	5.258	0.50	5.00	0	105%	85	115	0			
Cis-1,2-Dichloroethylene	1.08	0.10	1.00	0	108%	85	115	0			

Sample ID: LCSD-04709		Batch ID: R32260		Test Code: BTXEW		Units: µg/L		Analysis Date: 12/2/04 3:35:01 AM		Prep Date:	
Client ID:		Run ID:		ORGC8_041201B		SeqNo: 468110					
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HghLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	33.45	3.0	40.0	0	83.6%	85	115	41.4	21.3%	15	SR
Benzene	5.022	0.50	5.00	0	100%	85	115	5.26	4.55%	15	
Toluene	4.988	0.50	5.00	0	99.8%	85	115	5.32	6.36%	15	
Ethylbenzene	5.006	0.50	5.00	0	100%	85	115	5.28	5.39%	15	
m,p-Xylene	9.943	0.50	10.0	0	99.4%	85	115	10.5	5.28%	15	
o-Xylene	4.894	0.50	5.00	0	97.9%	85	115	5.26	7.18%	15	
Cis-1,2-Dichloroethylene	1.02	0.10	1.00	0	102%	85	115	1.08	5.87%	15	

Sample ID: LCS-12562	Batch ID: 12562	Test Code: TPHDIW	Units: µg/L	Analysis Date: 12/2/04 3:36:12 PM	Prep Date: 12/2/04						
Client ID:	Run ID: ORGC7_041202A	SeqNo: 467772									
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel	453.3	50	500	0	90.7%	80	120	0			
N-Tricosane	41.8	0.10	50.0	0	83.7%	28	107	0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Winzler and Kelly
Work Order: 0411596
Project: 90129801.049 Dutra Trucking

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Sample ID: LCSD-12562		Batch ID: 12562		Test Code: TPHDIW		Units: µg/L		Analysis Date: 12/2/04 3:54:32 PM		Prep Date: 12/2/04	
Client ID:		Run ID: ORGC7_041202A		SeqNo: 467773							
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel	498.8	50	500	0	99.8%	80	120	453	9.56%	15	
N-Tricosane	44.7	0.10	50.0	0	89.5%	28	107	41.8	6.70%	15	

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits	B - Analyte detected in the associated Method Blank
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits	



5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

P. of

LABORATORY NUMBER:

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5-7 Day
☐ STD (2-3 Wk) ☐ Other:

PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☐ Verbal ☐ By: / /
Final Report: FAX ☐ Verbal ☐ By: / /

CONTAINER CODES: 1—1/2 gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO₃; b—HCl; c—H₂SO₄; d—Na₂S₂O₄; e—NaOH; f—C₂H₃O₂Cl; g—other

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

SAMPLE DISPOSAL

☐ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NONLAQUEOUS SOLIDS WILL BE DETERMINED TO CONTAIN

WINZLER & KELLY CONSULTING ENGINEERS
STANDARD OPERATING PROCEDURES
for
MONITOR WELL PURGING AND SAMPLING ACTIVITIES

1.0 Objective

To establish accepted procedures for the purging and sampling groundwater from monitoring wells, to ensure that representative samples of formation water are collected by accepted methods.

1.1 Background

To obtain a representative groundwater sample from monitor wells, it is necessary to remove (purge) stagnant water from within and near the well prior to sampling. In general, three to seven casing volumes must be removed from the well prior to sampling, to provide a representative sample. Wells may be sampled after purging less than the minimum three volumes if well recharge rates are beyond reasonable time constraints. The specific method of well purging will be decided on a case by case basis, or as required by project specifications.

1.2 Personnel Required and Responsibilities

Project Manager: The Project Manager (PM) is responsible for ensuring that field personnel have been trained in the use of these procedures and for verifying that monitoring well purging and sampling activities are performed in compliance with these SOP's.

Field Technician: The Field Technician is responsible for complying with these SOP's, including the purging and sampling of monitor wells, the safe containerization of extracted waters, the documentation of field procedures, and the handling of samples..

2.0 WELL PURGING ACTIVITIES

2.1 Equipment Required

- Bottom-filling bailer, suction air pump, air-lift pump, gas operated (bladder) pump, submersible pump, or other pumping device
- pH meter
- Conductivity/Temperature Meter
- Water Level Indicator
- Well Sampling Data Sheet
- Indelible marker
- Disposable gloves
- Containers to hold extracted water (as required)

2.2. Purging Procedure

Prior to groundwater sampling, each monitoring well will be purged as described below. Prior to insertion into each well, all equipment will be either decontaminated (following W&K Decontamination procedures) or will be deemed clean or previously unused by the manufacturer.

- Open all monitoring wells to be purged and allow to equilibrate 5 to 15 minutes. Record time and visual observations regarding well access, condition, security, etc. in log book.
- Obtain depth to groundwater level readings according to Winzler & Kelly Standard Operating Procedures for Groundwater Level measurements and Free Phase Hydrocarbon Measurements. Record time and readings on the Well Level Measurement Data Sheet.
- Calculate the volume of standing water in each monitoring well. Record the volume calculated for each well on the Well Sampling Data Sheet.
- Begin purging the well by removing water from the well and collecting in a calibrated container (i.e., 5-gallon bucket marked in 1-gallon increments). The depth, or interval, from which the water is being purged should be noted on the data sheet.
- Obtain readings of field parameters (pH, conductivity, temperature, and turbidity) and make visual observations of color/odor/turbidity at selected intervals (i.e., every gallon, every five gallons, etc.) throughout the purging process. Depending on the calculated volume and the expected number of gallons to be purged, a minimum of five readings should be collected. Record the time, readings, and visual comments on the Purge Data Sheet.
- Continue purging until at least three (minimum) to four well volumes have been removed and the field parameters stabilize to within:

pH	~0.1
conductivity	~10%
turbidity	~10%
temperature	~1°

Do not exceed seven well volumes.
- Obtain a final depth to groundwater level measurement prior to collection of the groundwater sample and note the reading and time on the Well Level Measurement Data Sheet. Be sure that the measurement probe has been thoroughly decontaminated prior to insertion into each well. Note any qualitative comments regarding recharge rate of each well, and calculate the percent of the original water column that has recovered at the time of the final depth measurement. It is ideal to attain a minimum of 80% water level recovery prior to sampling, if time constraints allow. Very slow recharge rates may not allow purging the minimum three volumes or 80% recovery; lesser volumes may be used for sampling, as needed and documented.
- Collect a groundwater sample following the directions below under Section 3.0.
- Containerize all purge water and decontamination water in 55-gallon drums. Use yellow indelible markers (storeroom supply) to label all drums on the side with date, contents, origin and other pertinent information. Avoid marking the tops of drums

with black marker, such marks are temporary and will soon fade/rust. Note the number, condition and location of drums on site in the field notes.

3.0 WELL SAMPLING ACTIVITIES

3.1 Equipment Required

- Disposable bailer (previously unused) *
- Bottom emptying device (sampling port)
- Monofilament nylon line (min 40-lb test)
- Monitor Well Purge & Sample Data Sheets
- Sample containers (preserved, as required) - provided by the laboratory
- Sample labels
- Indelible marker
- Disposal gloves
- Decontamination soap (Alconox)
- Distilled water for equipment decontamination.

* A variety of sampling techniques are available for the collection of groundwater samples. Except where otherwise required, W&K only utilizes disposable polyethylene bailers to collect groundwater samples.

3.2. Sampling Procedure

Prior to collecting a groundwater sample from a monitoring well, each well must be properly purged in accordance with W&K's SOP for Monitoring Well Purging Activities (See Section 2.0 above), including the measurement of the final water level and documentation of recharge.

- Water from the desired screen interval will be collected by lowering the previously unused disposable, polyethylene, bottom-filling bailer into the well.
- When bailer is completely full, carefully retract the bailer from the well casing.
- Using a previously unused, new, bottom-emptying device, to minimize agitation of the water, transfer the water from the bailer to the sample containers.
- When sampling for volatile constituents (VOA's), the water samples will be collected in 40-ml glass vials (preserved as required by the analyses requested). Precautions will be taken to prevent capturing air bubbles in the vials.
- Upon filling, each vial will be immediately capped with a Teflon septum and plastic screw cap. The vial will be checked for air bubbles by inverting and gently tapping the vial. If any bubbles are visible, the vial will be refilled and confirmed to be free of any air bubbles.
- At a minimum, all samples will be labeled with the following information:

Sample ID	Date and Time Sample Collected
Location	Sampler's Initials
Project Number	Analyses Requested
- Sample information will be documented on the Chain-of-Custody form.

- All samples will be placed in an ice chest, chilled to a temperature of 4°C. The ice chest will remain in the custody of the sampler until it is transferred to the courier service for delivery at the analytical laboratory for analyses. Any and all transfer of sample custody must be documented on the Chain-of-Custody form with the name, signature, affiliation, date and time of the persons releasing and receiving custody of the samples.
- Upon completion of the sampling activities, each well shall be closed and secured by replacing the well cap and securing the lock.
- Dispose of gloves, bailers, bottom-emptying devices, and bailing line after each use.

Carlos Acu

90129801-049

FIELDWORK REQUEST QUARTERLY MONITORING AND SAMPLING

Dutra Trucking, Boyd Road, Arcata

PLEASE
ON
PERFORM Work requested November 29, 2004
1

Our client Frank Dutra may be on site to witness quarterly sampling field work. His phone number is (707) 322-2771 cell.

Obtain depth to water data.

Upon arrival at the site, open wells to allow groundwater to stabilize. Take measurements from mark at north edges of well casings. For dry wells, indicate this on field forms. Wells containing very little water that do not promptly recharge following purging are to be considered dry.

Sample Groundwater from all Five Wells

- Chemical analyses of the 5 water samples for TPH-D by Method 3550 and BTEX and MTBE by Method 8021; (2-75 ml VOAs, 3- 40 ml VOAs)
- MW-3 is only well where contamination is anticipated (See attached figures and table)
- Collect dissolved oxygen, conductivity, temp, and pH data during quarterly sampling work.
- Estimated field time 5 hours and will include delivery of samples to North Coast labs.
- Note that chain link fence runs between wells 1, 2, & 3 and wells 4 & 5.
- Adequate drums are on site for storing purge water.
- During well purging, keep water from well 3 separate from other well purge water.
- Label drums as appropriate

Please call me with any questions.
Ken Thiessen



[Send To Printer](#) [Back to Map](#)

5005 Boyd Rd
Arcata CA
95521-4409 US

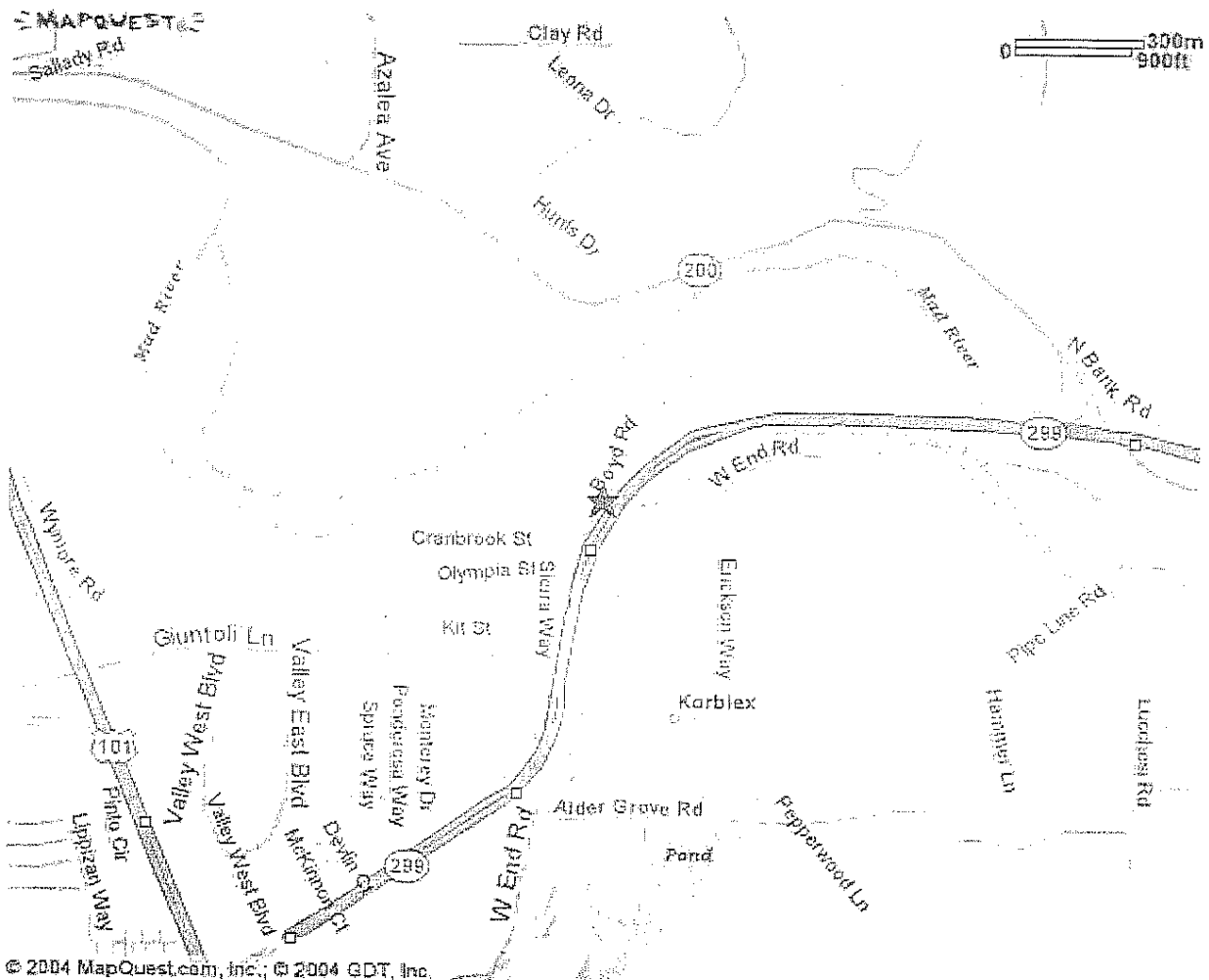
Notes:

.....

.....

.....

.....



© 2004 MapQuest.com, Inc.; © 2004 GDT, Inc.

All rights reserved. Use Subject to License/Copyright | [Map Legend](#)



This map is informational only. No representation is made or warranty given as to its content. User assumes all risk of use.
MapQuest and its suppliers assume no responsibility for any loss or delay resulting from such use.

[Privacy Policy & Legal Notices](#) © 2004 MapQuest.com, Inc. All rights reserved.

FILE: J:\GIS\OB3\90129701\dwg\29701s03a.dwg DATE: Jul 13 '04 @ 8:44am

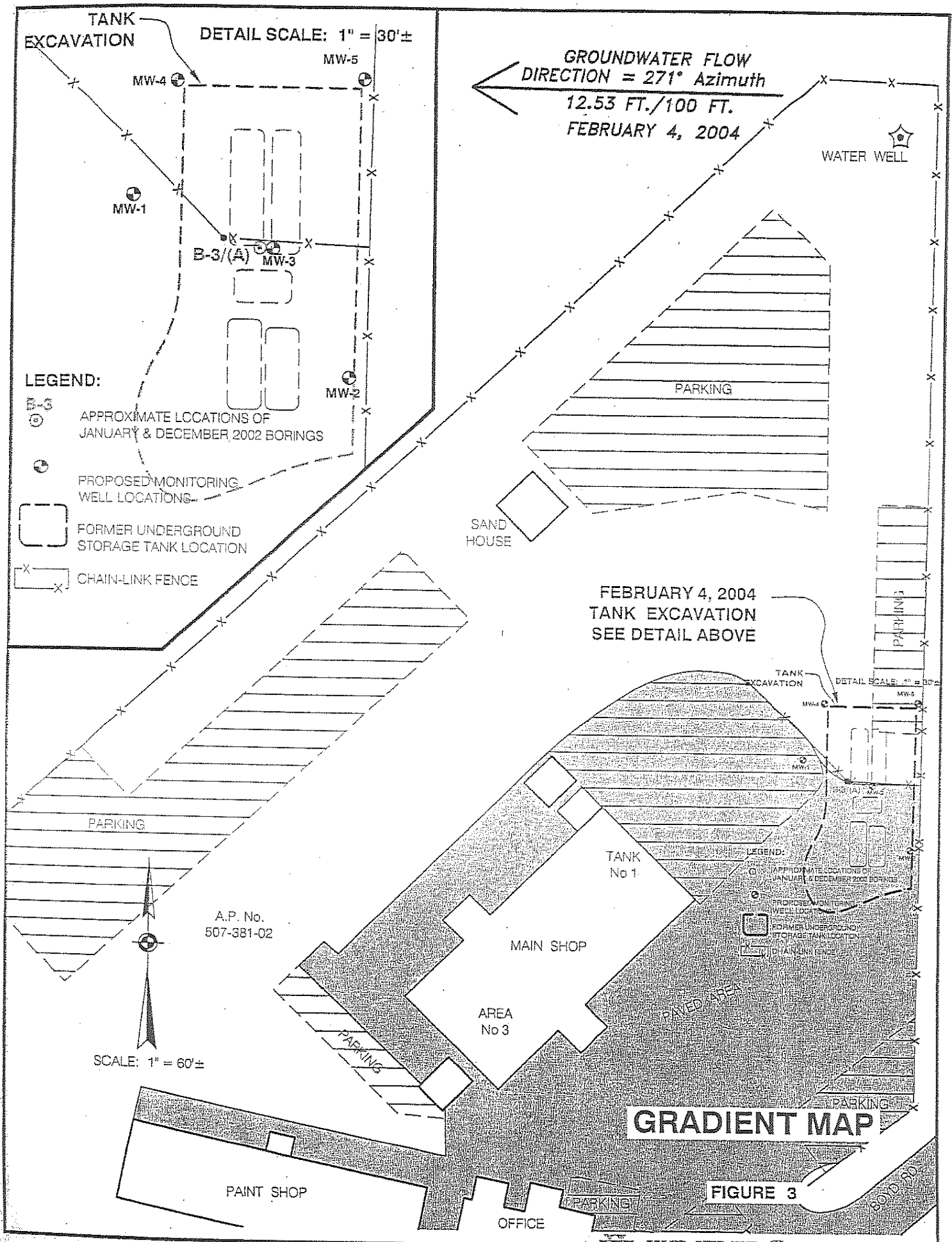


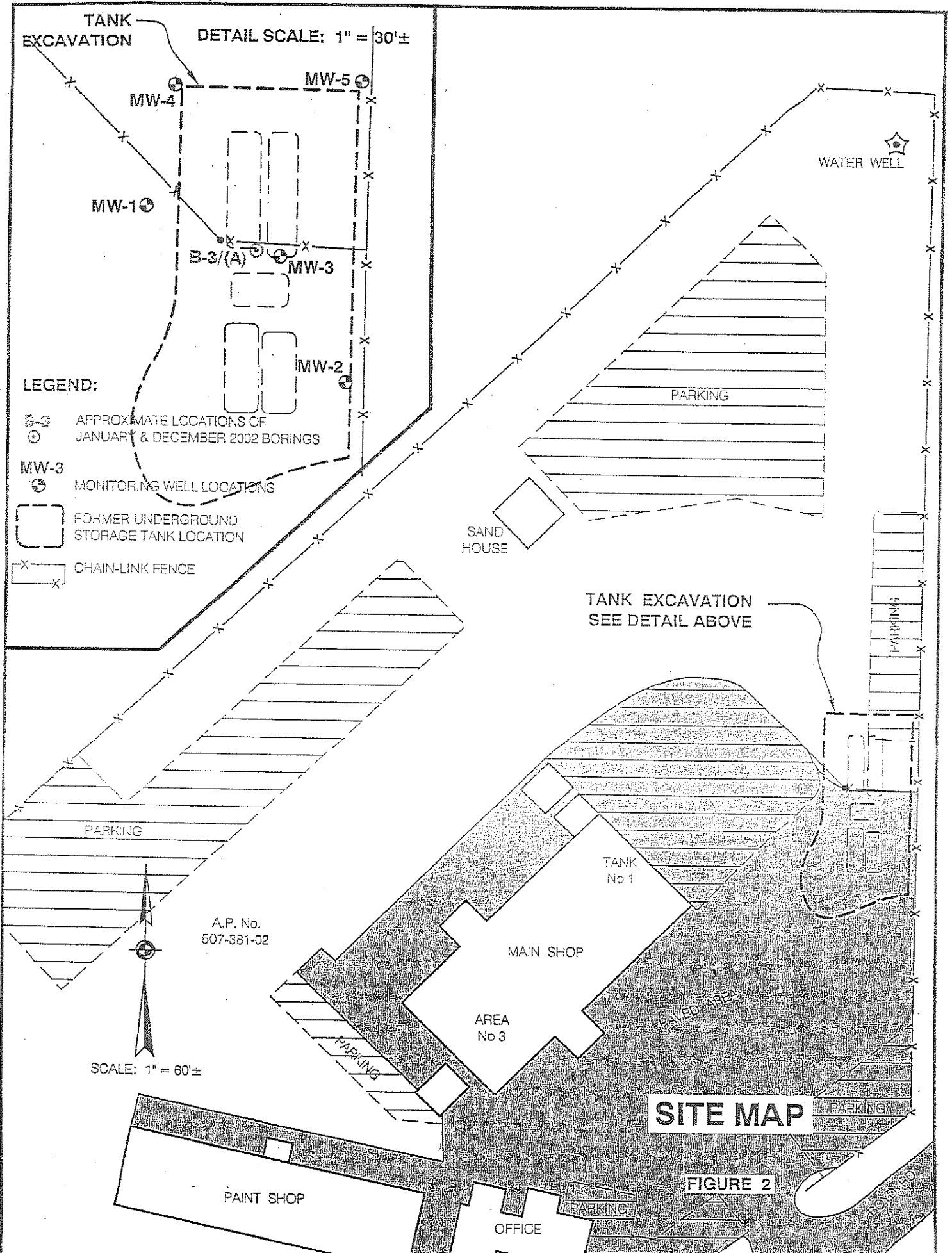
TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Former Dutra Trucking, LOP #12264
(All units reported in parts per billion)

Sample ID	Sample Date	TPH as Diesel (ppb)	TPH as Motor Oil (ppb)	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Total Xylenes (ppb)	Methyl Tertiary Butyl Ether (ppb)	(DIPE) Di-Isopropyl Ether (ppb)	Ethyl Tertiary Butyl Ether (ppb)	Tertiary Amyl Methyl Ether (ppb)	Tertiary Butyl Alcohol (ppb)	1,2-Dichloro benzene (ppb)	1,3-Dichloro benzene (ppb)	1,4-Dichloro benzene (ppb)	1,2-Dichloro ethane (ppb)	1,2-Dibromo methane (ppb)	Chloro benzene (ppb)
INITIAL SUBSURFACE INVESTIGATION 2002																			
B1	26-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2	26-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	29-Jan-02	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5	29-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Domestic Well	26-Jan-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	30-Dec-02	21,000	6,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HYDROGEOLOGIC INVESTIGATION 2003																			
MW-1	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3	4-Feb-04	320	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	4-Feb-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 2004 GROUNDWATER MONITORING EVENT																			
MW-2	3-May-04	ND	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	3-May-04	850	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	3-May-04	ND	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ND Not Detected
NA Not Analyzed

date: 2-10-03 @ 11am

90129701\dwg\297a045f01.dwg





By CA Date 11-30-04 Client Dutra Sheet No. _____ of _____
Subject Monitoring Job No. 90129801.0

- Loaded up the truck
- Arrived on site + located the wells
- Opened up the wells
- Waited for the wells to equilibrate
- Decon water meter upon arrival + between wells
- used new disposable bailers at each well to purge + sample
- Mr. Dutra showed up
- Wells MW-1, 4, + 5 are dry.
- MW-3 has very little water. I collected samples without purging. I was only able to get 2-60ml voas + 2- regular voas.
- I changed gloves constantly.
- I purged MW-2 with a bailer + waited for it to recharge to 80% before sampling
- Stowed the wells in a cooler with ice
- Secured the wells + drum

WINZLER & KELLY Consulting Engineering

SUBJECT NAME: Dubm
PROJECT NUMBER: 90129801.049
WELL DESIGNATION: MW-2

PROJECT DATE: 11-30-04
SAMPLER: _____
SAMPLE NUMBER: MW-72

CONDITION OF WELL HEAD/VAULT/CAP & LOCK

- A. TOP OF CASING ELEVATION
B. DEPTH TO GROUNDWATER (initial) 13.53
C. DEPTH OF WELL
D. HEIGHT OF WATER COLUMN (C-B) 20 MEASURED 20
E. GROUNDWATER ELEVATION (A-B) 20 - 13.53 = 6.47

CASING DIAMETER: 2" _____ 3" _____ 4" _____ OTHER _____

CALCULATED WELL VOLUME: $D \times V = 6.47 \times 1.63 = 1.05$

- A. Volume (V) of 2" wall = 0.163 gal/ft
B. Volume (V) of 4" wall = 0.653 gal/ft

ODOR no SHEEN no FLOATING PRODUCT THICKNESS no

PUMP TUPE: POLY BAILER _____ STAINLESS BAILER _____
ELECTRIC _____ OTHER _____

PUMP DEPTH:

TIME	GALLONS PURGED	NO. OF WELL VOLUMES	PH	TEMPERATURE (°F OR °C)	CONDUCTIVITY (µmhos/cm or µmhos/cm)	TURBIDITY (NTU or visual)
11:58	1	0.95	5.91	15.1	0.16 mS	cloudy
12:00	2	1.90	5.52	15.0	0.13 mS	"
12:02	2.5	2.38	5.39	16.2	0.12 mS	"
12:04	2.75	2.67	5.21	15.1	0.12 mS	"
12:06	3.0	3.00	5.01	15.0	0.11 mS	"

RECHARGE RATE (qualitative): _____
SAMPLER TYPE: TEFLON BAILER _____ ACRYLIC BAILER _____ DISPOSABLE BAILER _____

SAMPLES COLLECTER: PRESERVED VOA'S _____ UNPRESERVED VOA'S _____
PRESERVED LITERS _____ UNPRESERVED LITERS _____
500ml PLASTIC BOTTLE WITH PRESERVATIVE FOR METALS:
FILTERED _____ UNFILTERED _____ OTHER _____

COMMENTS _____

PROJECT NUMBER: 90129801.049

FIELD PERSONNEL: CA

[illegible]

UST Fund Sampling Supplies and Equipment

PROJECT NAME: Dutra trucking

SAMPLER NAME: CA

JOB NUMBER: 90129801.049

DATE WORKED: 11-30-04

FIELD HOURS: _____

Quantity	Item	Cost \$	per	total
PPE				
	Tyeks Suits (White)	\$8.00	each	
	Polyethylene Suit (yellow)	\$7.50	each	
	Gloves, nitrile	\$2.50	pair	
	Organic Vapor Cartridge R51A	\$10.00	pair	
SAMPLING				
	Traffic Control Barricades	\$5.00	each	
<u>2</u>	Disposable Bailers and drain tube	\$8.00	each	<u>16.00</u>
	Pressurized bailers	\$10.00	each	
	Filters	\$15.00	each	
	Encore Sampler Set (Included 3- 5 gm. samplers)	\$30.00	each	
	Extra sampler	\$10.00	each	
	Purge pump 2" submersible	\$45.00	day	
	2" Well Point w/ 4' extensions	\$50.00	day	
	1" Well Point w/ 4' extensions	\$50.00	day	
	Drum Theives	\$3.04	each	
	Soil tubes (brass)	\$8.00	each	
	Soil tubes (st)	\$10.00	each	
	Hand auger with split spoon sampler/hammer	\$30.00	day	
WELL CONSTRUCTION & DEVELOPMENT				
	Stainless bailer	\$5.00	day	
	1 1/4" poly well development hose	\$0.25	foot	
	2" PVC well casing SCH 40	\$3.50	foot	
	2" PVC slotted well screen SCH 40	\$4.50	foot	
	Visqueen (6 mil) sheeting (100x20 ft)	\$70.00	roll	
	Locking well cap (2")	\$20.00	each	
	Locking well cap (4")	\$20.00	each	
	Padlock	\$10.00	each	
	PVC slip on caps (2")	\$4.00	each	
	PVC slip on caps (4")	\$8.00	each	
	Bentonite 50 lb. Bag	\$10.00	each	
	55 gallon Drum	\$40.00	each	
INSTRUMENTATION				
<u>1</u>	Water level indicator probe	\$25.00	day	<u>25.00</u>
	Water/Product interface meter	\$40.00	day	
<u>1/2</u>	Dissolved Oxygen Meter	\$40.00	day	<u>20.00</u>
	DO field test kit	\$1.00	test	
	Photovac TIP Photo-ion detector	\$100.00	day	
	Sensidyne Pump	\$25.00	day	
	Sensidyne Tubes	\$7.00	each	
	Air Sampling pump	\$50.00	day	
<u>1/2</u>	pH/Cond/Temp Meter	\$40.00	day	<u>20.00</u>
	Turbidity Meter	\$20.00	day	
	Pipe Finder (metal detector)	\$20.00	day	
	Surveying Total Station	\$100.00	day	
SMALL ITEMS				
	Misc. small items*	\$25.00	day	

*small items include disposable gloves, water, foil, tape, towels, plastic bags, fishline, soap, labels, etc.

TOTAL

MILEAGE LOG:

ending:	<u>117703</u>
starting:	<u>117679</u>
total	<u>24</u>

\$0.40 mile

9.60

